

WHAT IS CLAIMED IS:

1           1.     A mail processing apparatus comprising:  
2                     a paper feeding mechanism that is adapted to feed sheets of paper;  
3                     a collection bin that is adapted to receive the sheets of paper from the  
4 paper feeding mechanism in a stack;  
5                     a retrieval mechanism that is configured to move a bottom one of said  
6 sheets of paper from the stack; and  
7                     a deionizer that is adapted to reduce static electricity in the vicinity of  
8 the stack to facilitate removal by the retrieval mechanism of only one of said sheets of paper  
9 at a time.

1           2.     The mail processing apparatus as in claim 1 wherein said deionizer  
2 comprises a deionizing static bar.

1           3.     The mail processing apparatus as in claim 1 wherein said deionizer is  
2 positioned so that said sheets fed by said paper feeding mechanism pass over said deionizer  
3 as said sheets are received by said collection bin.

1           4.     The mail processing apparatus as in claim 1 wherein said retrieval  
2 mechanism comprises a roller.

1           5.     The mail processing apparatus as in claim 1 wherein said collection  
2 bin further comprises at least one foot, said foot for facilitating the removal of only said one  
3 sheet by stripping off adjacent sheets from said one sheet.

1           6.     The mail processing apparatus as in claim 1 further comprising a  
2 printer that is adapted to print alpha-numeric characters on said sheets prior to said sheets  
3 being fed by said paper feeding mechanism.

1           7.     The mail processing apparatus as in claim 1 further comprising a card  
2 attachment mechanism for attaching a card to said one sheet.

1           8.     The mail processing apparatus as in claim 1 further comprising a sheet  
2 folding mechanism for folding said one sheet.

1           9.     A method of processing mail, said method comprising:

2 providing a plurality of sheets of paper;  
3 feeding said sheets of paper sequentially into a collection bin to form a  
4 stack, said collection bin comprising a deionizer that is adapted to reduce static electricity in  
5 the vicinity of the stack; and  
6 retrieving a bottom one of said sheets of paper from the stack with a  
7 retrieval mechanism.

1 10. The method as in claim 9 wherein said deionizer comprises a static bar,  
2 and wherein said feeding comprises sequentially passing said sheets over said static bar.

1 11. A mail processing apparatus comprising:  
2 a track over which paper sheets are adapted to pass in sequence;  
3 a moving mechanism that is adapted to move the sheets along the  
4 track; and  
5 an inserting mechanism that is adapted to add an insert to one of the  
6 sheets while on the track, wherein the inserting mechanism includes;  
7 a grasping mechanism that is adapted to grasp and move the  
8 insert onto the sheet; and  
9 a nozzle positioned above the track that is adapted to direct a  
10 gas stream onto the insert to hold the insert to the sheet, thereby facilitating the passage of the  
11 grasping mechanism over both the sheet and the insert when grasping a subsequent insert for  
12 a subsequent sheet.

1 12. The mail processing apparatus as in claim 11 wherein said inserting  
2 mechanism comprises a bin to hold a stack of inserts, and at least one vacuum finger to pull a  
3 bottom insert from said stack where it is grasped by said grasping mechanism.

1 13. The mail processing apparatus as in claim 11 wherein said nozzle is  
2 coupled to said grasping mechanism.

1 14. The mail processing apparatus as in claim 11 wherein said nozzle  
2 comprises an elongate slit for directing said gas stream.

1 15. The mail processing apparatus as in claim 11 wherein said moving  
2 mechanism comprises a pair of fingers that move along said track.

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1                   16.    The mail processing apparatus as in claim 11 further comprising a  
2    sensor that is adapted to detect if the insert has been grasped by said grasping mechanism.

1                   17.    The mail processing apparatus as in claim 16 wherein said sensor  
2    comprises a pressure sensor.

1                   18.    The mail processing apparatus as in claim 16 wherein said sensor  
2    comprises an optical sensor.

1                   19.    The mail processing apparatus as in claim 16 further comprising an  
2    indicator that is adapted to indicate if said grasping mechanism fails to grasp said insert.

1                   20.    The mail processing apparatus as in claim 19 wherein said indicator  
2    further comprises an interrupt circuit coupled to and adapted to stop operation of said moving  
3    mechanism and said inserting mechanism, if said grasping mechanism fails to grasp said  
4    insert.

1                   21.    The mail processing apparatus as in claim 11 further comprising a  
2    sensor that is adapted to detect if more than one insert has been grasped by said grasping  
3    mechanism.

1                   22.    The mail processing apparatus as in claim 21 further comprising an  
2    indicator that is adapted to operate if said grasping mechanism grasps more than one said  
3    insert.

1                   23.    The mail processing apparatus as in claim 22 wherein said indicator  
2    further comprises an interrupt circuit coupled to and adapted to stop operation of said moving  
3    mechanism and said inserting mechanism, if said grasping mechanism grasps more than one  
4    said insert.

1                   24.    A method of processing mail, said method comprising:  
2                    passing first and second paper sheets along a track; and  
3                    adding an insert to said first sheet, said adding comprising;  
4                         grasping said insert with a grasping mechanism;  
5                         moving said insert onto said first sheet; and

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6 holding said insert to said first sheet, said holding comprising  
7 directing a gas stream onto said insert, and wherein said holding is adapted to facilitate the  
8 passage of the grasping mechanism over both the first sheet and the insert when grasping a  
9 subsequent insert for the second sheet.

1 25. The method as in claim 24 further comprising sensing whether said  
2 grasping mechanism has grasped only one insert using a sensor.

1 26. The method as in claim 24 further comprising ceasing said passing and  
2 adding if said sensor indicates that said grasping mechanism failed to grasp said insert.

1 27. The method as in 24 further comprising ceasing said passing and  
2 adding if said sensor indicates that said grasping mechanism grasped more than one said  
3 insert.

1 28. A mail processing apparatus comprising;  
2 a track;  
3 an envelope feeder that is adapted to feed an envelope onto the track;  
4 an inserting mechanism that is adapted to place inserts into the  
5 envelope; and  
6 a nozzle system that is adapted to direct a gas into the envelope to hold  
7 the envelope open for the inserts, wherein the nozzle system comprises;  
8 a central nozzle that is adapted to direct said gas into a central  
9 region of the envelope; and  
10 a side nozzle that is adapted to direct said gas near an edge of  
11 the envelope.

1 29. The mail processing apparatus as in claim 28 further comprising a gas  
2 adjust nozzle to control a flow rate of said gas through said side nozzle.

1 30. The mail processing apparatus as in claim 28 further comprising a  
2 fixture to hold said side nozzle to said central nozzle.

1 31. A method of processing mail, said method comprising;  
2 providing an insert to be placed into an envelope;

3 feeding the envelope onto a track, said envelope having an opening;  
4 and  
5 directing a gas into the opening to hold open the envelope to facilitate  
6 receipt of the insert by the envelope, said directing comprising:  
7 directing the gas with a central nozzle into a central region of  
8 the envelope opening; and  
9 directing the gas with a side nozzle near an edge of the  
10 envelope opening.